

1 / 14

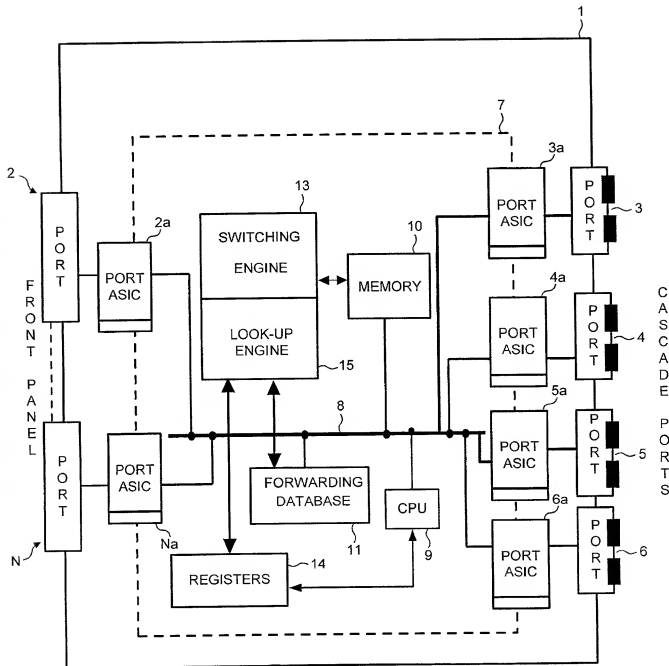


FIG. 1

10067738-0208001

2 / 14

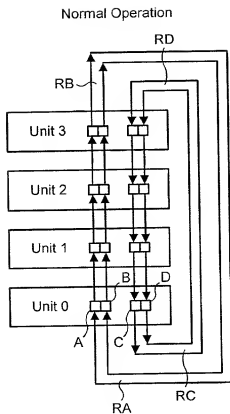


FIG. 2

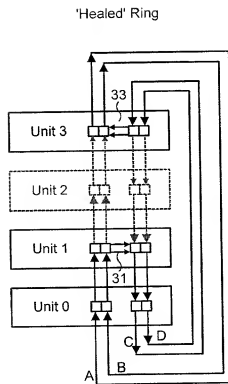


FIG. 3

20067738-020800

3 / 14

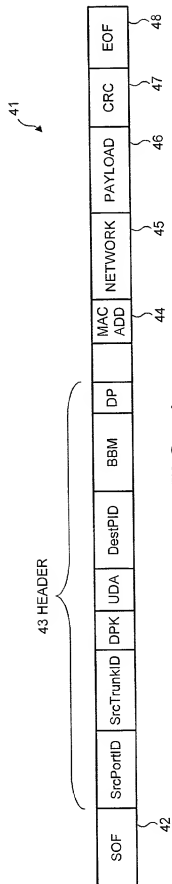


FIG. 4

208020-8E229001

4 / 14

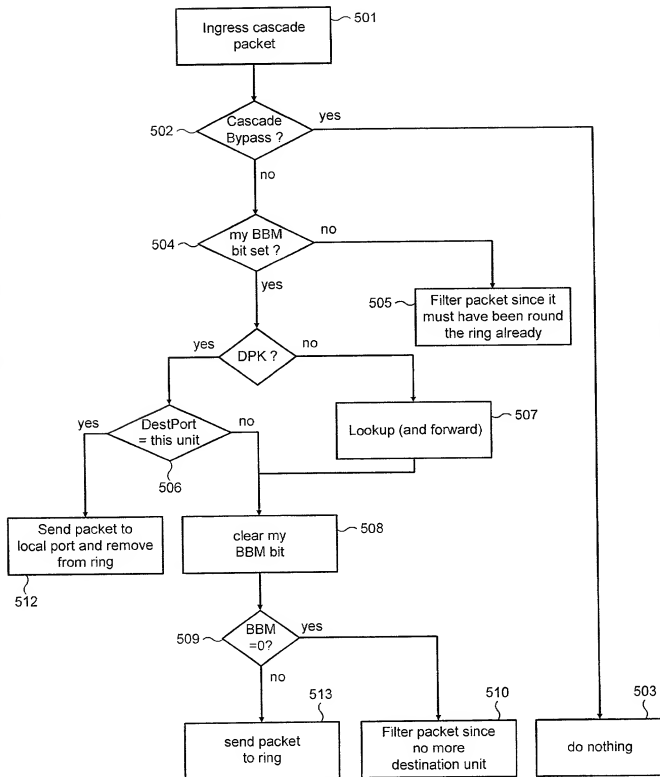


FIG. 5

5 / 14

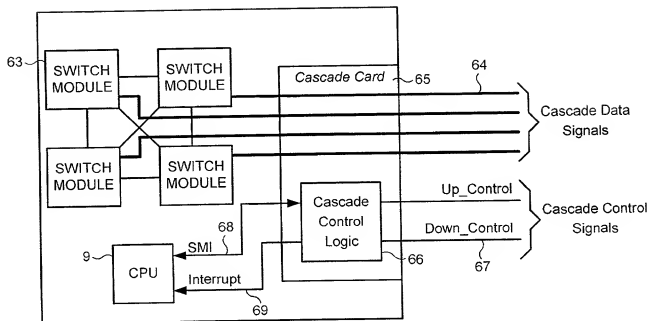


FIG. 6

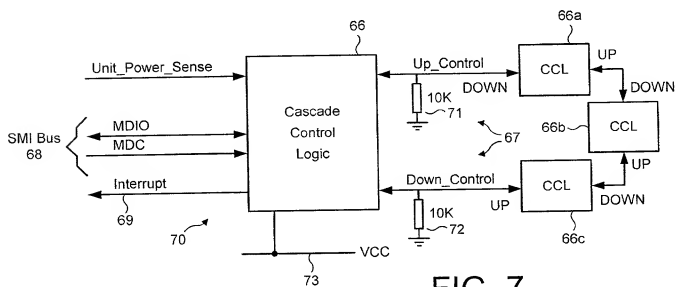
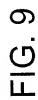


FIG. 7



7 / 14

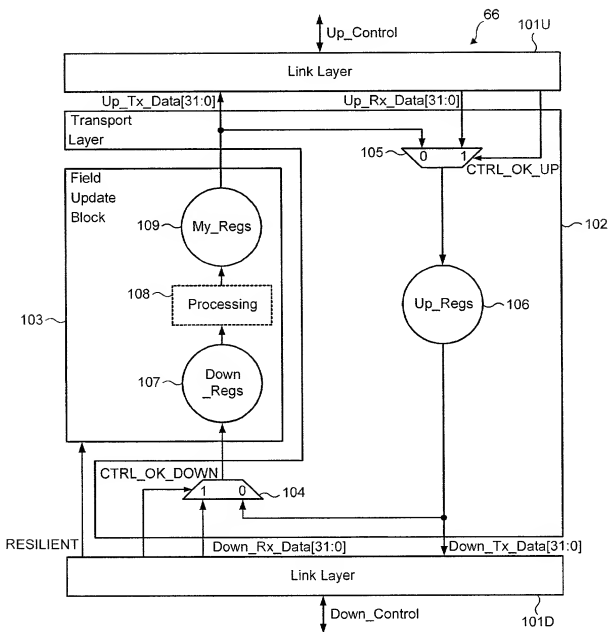


FIG. 10

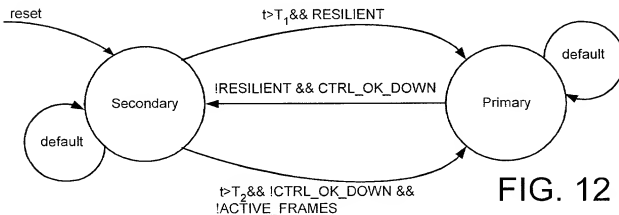


FIG. 12

20200228 10:20:00

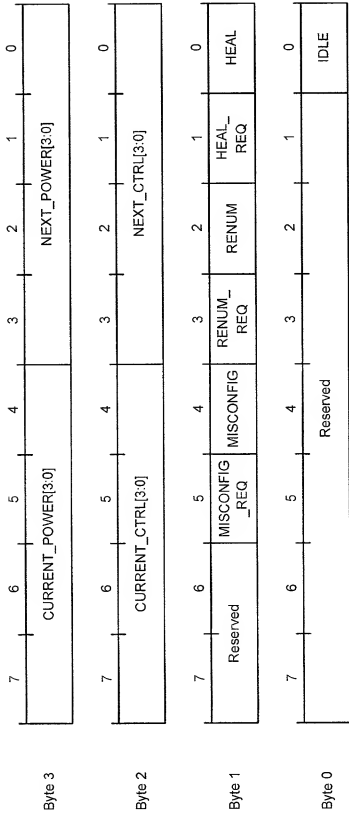


FIG. 11

9 / 14

```
always @(posedge clk or negedge reset)
begin
  if (reset) begin
    my_regs_UNIT_ID <= 0;
    my_regs_MISCONFIG_REQ <= FALSE;
    my_regs_RENUM_REQ <= FALSE;
  end
  else begin
    my_regs_UNIT_ID <= my_regs_UNIT_ID;
    my_regs_MISCONFIG_REQ <= FALSE;
    my_regs_RENUM_REQ <= FALSE;

    if (PRIMARY) begin
      if (RESILENT)
        my_regs_UNIT_ID <= 0;
      end
      else begin
        if (!down_regs_IDLE) begin
          if (down_regs_UNIT_ID==3 &&
down_regs_NEXT_CTRL==4'b1111)
            my_regs_MISCONFIG_REQ <= TRUE;
          else if (down_regs_UNIT_ID == 3)
            my_regs_RENUM_REQ <= TRUE;
          else
            my_regs_UNIT_ID <= down_regs_UNIT_ID + 1;
          end
        end
      end
    end
  end
end

always
begin
  // generate UNIT_ID from NEXT_CTRL
  casex (down_regs_NEXT_CTRL)
    4'b1xxx: down_regs_UNIT_ID = 3;
    4'b01xx: down_regs_UNIT_ID = 2;
    4'b001x: down_regs_UNIT_ID = 1;
    default: down_regs_UNIT_ID = 0;
  endcase
end
```

FIG. 13

10067738-020802

10 / 14

always @(posedge clk or negedge reset)
begin
 if (reset) begin
 my_regs_CURRENT_POWER <= 4'b0000;
 my_regs_NEXT_POWER <= 4'b0000;
 my_regs_CURRENT_CTRL <= 4'b0000;
 my_regs_NEXT_CTRL <= 4'b0000;
 end
 else begin
 if (!down_regs_IDLE) begin
 if (PRIMARY) begin
 my_regs_CURRENT_POWER <=
 down_regs_NEXT_POWER;
 my_regs_NEXT_POWER <= MY_POWER <<
 my_regs_UNIT_ID;
 // MY_POWER is a sample of the input
 Unit_Power_Sense
 my_regs_CURRENT_CTRL <=
 down_regs_NEXT_CTRL;
 my_regs_NEXT_CTRL <= 1'b1 <<
 my_regs_UNIT_ID;
 end
 else begin
 my_regs_CURRENT_POWER <=
down_regs_CURRENT_POWER;
 my_regs_NEXT_POWER <=
 down_regs_NEXT_POWER | (MY_POWER <<
 my_regs_UNIT_ID);
 my_regs_CURRENT_CTRL <=
 down_regs_CURRENT_CTRL;
 my_regs_NEXT_CTRL <=
 down_regs_NEXT_CTRL | (1'b1 <<
 my_regs_UNIT_ID);
 end
 end
 else begin
 // leave registers unchanged
 end
 end
end

FIG. 14

10067738-020802

Byte 3	CURRENT_POWER[3:0]			NEXT_POWER[3:0]		
Byte 2	CURRENT_CTRL[3:0]			NEXT_CTRL[3:0]		
Byte 1	Reserved	MISCONFIG_REQ	RENUM_REQ	RENUM	HEAL_REQ	HEAL
Byte 0	Reserved			IDLE		
	7	6	5	4	3	2

FIG. 15

Byte 4	ACTIVE_FRAMES	MY_POWER	RESILIENT	PRIMARY	CTRL_OK_UP	CTRL_OK_DOWN	UNIT_ID[1:0]
Byte 3	CURRENT_POWER[3:0]			NEXT_POWER[3:0]			
Byte 2	CURRENT_CTRL[3:0]			NEXT_CTRL[3:0]			
Byte 1	Reserved	MISCONFIG_REQ	RENUM_REQ	RENUM	HEAL_REQ	HEAL	
Byte 0	Reserved			IDLE			
	7	6	5	4	3	2	1

FIG. 16

12 / 14

My_Regs	7	Reserved						0
								1
								2
								3
								4
								5
								6
								7
								8
								9
								10
								11
								12
								13
							14	
							15	
							16	
							17	
							18	
							19	
							20	
							21	
							22	
							23	
							24	
							25	
							26	
							27	
							28	
							29	
							30	
							31	
							32	
							33	
							34	
							35	
							36	
							37	
							38	
							39	
							40	
							41	
							42	
							43	
							44	
							45	
							46	
							47	
							48	
							49	
							50	
							51	
							52	
							53	
							54	
							55	
							56	
							57	
							58	
							59	
							60	
							61	
							62	
							63	
							64	
							65	
							66	
							67	
							68	
							69	
							70	
							71	
							72	
							73	
							74	
							75	
							76	
							77	
							78	
							79	
							80	
							81	
							82	
							83	
							84	
							85	
							86	
							87	
							88	
							89	
							90	
							91	
							92	
							93	
							94	
							95	
							96	
							97	
							98	
							99	
							100	
							101	
							102	
							103	
							104	
							105	
							106	
							107	
							108	
							109	
							110	
							111	
							112	
							113	
							114	
							115	
							116	
							117	
							118	
							119	
							120	
							121	
							122	
							123	
							124	
							125	
							126	
							127	
							128	
							129	
							130	
							131	
							132	
							133	
							134	
							135	
							136	
							137	
							138	
							139	
							140	
							141	
							142	
							143	
							144	
							145	
							146	
							147	
							148	
							149	
							150	
							151	
							152	
							153	
							154	
							155	
							156	
							157	
							158	
							159	
							160	
							161	
							162	
							163	
							164	
							165	
							166	
							167	
							168	
							169	
							170	
							171	
							172	
							173	
							174	
							175	
							176	
							177	
							178	
							179	
							180	
							181	
							182	
							183	
							184	
							185	
							186	
							187	
							188	
							189	
							190	
							191	
							192	
							193	
							194	
							195	
							196	
							197	
							198	
							199	
							200	
							201	
							202	
							203	
							204	
							205	
							206	
							207	
							208	
							209	
							210	
							211	
							212	
							213	
							214	
							215	
							216	
							217	
							218	
							219	
							220	
							221	
							222	
							223	
							224	
							225	
							226	
							227	
							228	
							229	
							230	
							231	
							232	
							233	
							234	
							235	
							236	
							237	
							238	
							239	
							240	
							241	
							242	
							243	
							244	
							245	
							246	
							247	
							248	
							249	
							250	
							251	
							252	
							253	
							254	
							255	
							256	
							257	
							258	
							259	
							260	
							261	
							262	
							263	
							264	
							265	
							266	
							267	
							268	
							269	
							270	
							271	
							272	
							273	
							274	
							275	
							276	
							277	
							278	
							279	
							280	
							281	
							282	
							283	
							284	
							285	
							286	
							287	
							288	
							289	
							290	
							291	
							292	
							293	
							294	
							295	
							296	
							297	
							298	
							299	
							300	
							301	
							302	
							303	
							304	
							305	
							306	
							307	
							308	
							309	
							310	
							311	

FIG. 17

13 / 14

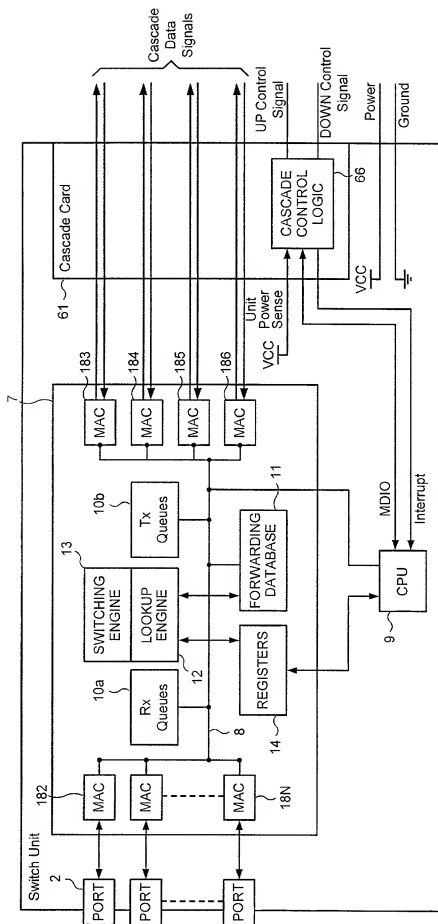


FIG. 18

208020-8E229001

14 / 14

	CURRENT_ POWER	CURRENT_ CTRL	HEAL	CTRL_OK_UP	CTRL_OK_ DOWN
Unit-3	1111	1111	0	1	1
Unit-2	1111	1111	0	1	1
Unit-1	1111	1111	0	1	1
Unit-0	1111	1111	0	1	1

CCL Register Fields in Normal Mode

FIG. 19

	CURRENT_ POWER	CURRENT_ CTRL	HEAL	CTRL_OK_UP	CTRL_OK_ DOWN
Unit-3	1011	1111	0	1	1
Unit-2	1011	1111	0	1	1
Unit-1	1011	1111	0	1	1
Unit-0	1011	1111	0	1	1

CCL Register Fields in Healed Mode

FIG. 20

	CURRENT_ POWER	CURRENT_ CTRL	HEAL	CTRL_OK_UP	CTRL_OK_ DOWN
Unit-3	1111	1111	1	1	1
Unit-2	1111	1111	1	1	0
Unit-1	1111	1111	1	0	1
Unit-0	1111	1111	1	1	1

CCL Register Fields in Healed Mode (due to missing cable)

FIG. 21

10067738-020802